



# Hampton Roads Metropolitan Medical Response System

MMRS FY04 Program Continuation  
Grant - Special Project

Mass Casualty Model to Support MMRS  
Training and Analysis Requirements

William Ginnow, M.S., R.Ph.  
Program Manager  
Hampton Roads Metropolitan  
Medical Response System





# Background

- Recurring training required to ensure MMRS participants ready to respond to mass casualty event
- Current training focuses on first responders and scene commanders
- Training for management of MCI at level above field personnel only occurs during large and infrequent exercise events





# Project Description

- Develop a simulation software program, interface and supporting data for a mass casualty model that realistically portrays the effects of a regional MCI in the 16 Hampton Roads jurisdictions
- Model capable of simulating biological and chemical disasters and the resultant effects on Hampton Roads population







# Project Description

- Model includes population response to disasters
- Model allows hospital managers, public health officials and city/county emergency managers to employ simulation to train emergency operations personnel and to facilitate policy and procedure analysis of MCI events





# Partners

- Leverages development done by Carnegie Mellon University's Center for Computational Analysis of Social and Organizational Systems (CASOS) on the BioWar simulation with a Homeland Security Geographical Information System (HLS-GIS) developed by the Virginia Modeling and Simulation Center (VMASC) at Old Dominion University





# BioWar

- Scalable city-wide simulation capable of simultaneously simulating the impact of background diseases, natural outbreaks, and bioterrorism attacks on the population's behavior within a city







# BioWar

- Multi-agent simulator includes:
  - Social & institutional networks
  - Weather & climate conditions
  - Physical, economical, technological, communication, health & governmental structures which modulate disease outbreaks and individual behavior





# BioWar

- Individual behaviors include:
  - Health seeking
  - Entertainment
  - Work/school behavior







# BioWar

- Reports are generated including:
  - Absenteeism patterns
  - Pharmaceutical purchases
  - Doctor's office insurance claim reports
  - Hospital /emergency room reports
  - Sub-reports available for specific sentinel groups (military, first responders, health workers)





# Graphical Interface (HLS-GIS)

- Graphical representation of what is going on inside BioWar
  - Graphical displays of cities & regions
  - Roads, hospitals, fire/police stations, schools
  - How disaster effects spread within & among cities,





# Graphical Interface (HLS-GIS)

- Locations of nearest resources/response team
- Can facilitate planning and response coordination
- Can tailor output to what EM, PH and hospital managers need to make decisions for managing MCI







# Deliverables

- Executable simulation software program, interface & supporting data of a mass casualty model for 16 Hampton Roads jurisdictions
- Monthly technical progress reports
- Final report describing design, capabilities, limitations and operation of program





# Operation

- Will require personnel with IT background to operate
- Hardware
  - BioWar – Dual processor Pentium 4, 2GB RAM
  - HLS-GIS – Single processor Pentium 4, 1GB RAM
  - Computers must be networked





# Operation

- Can run on own server or hosted computer
- Training audience can use standard PC with web browser







# Options for Use

- Tabletop Exercise (Option 1)
  - Provide scenarios to players
  - Start event at time zero
  - Run model until you see indications of disease or casualties
  - Pause & make decisions





# Options for Use

- Tabletop Exercise (Option 2)
  - Provide scenarios to players
  - Start event at time zero
  - Run model at real time or faster
  - Introduce time pressure & sense of urgency





# Options for Use

- Analysis Mode (Option 3)
  - Run model to see what happens with pre-scripted decisions
  - Change decisions – run again
  - Can run hours, days or weeks of information in a few minutes







# Timeline

- Data collection, interface development & tailoring output for MMRS needs ongoing
- Working model – June 2005
- Completion – March 2006

